ABSTRACT OF THE DISCLOSURE

A leak detection apparatus detects leaks or premature wearing in a lined fluid filled vessel. A leak detection apparatus comprises a current density meter, a power supply, and a probe. The probe is inserted into the fluid filled vessel. The power supply supplies an AC or DC electric current to a directional amplifier of the probe. A torroid of the probe senses the current density in the fluid and sends an electrical signal to the current density meter. The current density meter measures the electrical signal and communicates a current density readout to a display. This readout indicates to an operator whether or not there is a crack, premature wearing, or a bypass.